ENERGY STAR® No- and Low-Cost Checklist for Saving Energy and Water in Multifamily Housing

Use the checklist below to help identify and implement no- and low-cost changes to improve energy and water efficiency in multifamily properties. These no-and low-costs tips are grouped according to engagement strategies, building upgrades that follow EPA's recommend five-stage approach, and water-saving strategies. For complete guidance on completing a building upgrade effort, see EPA's ENERGY STAR Building Upgrade Manual.

Before you start any improvement projects, be sure to research energy efficiency programs, rebates, and incentives that may be available from your utility or the local/state government.

Building Name: **Assessment Date:**

CATEGORY	MEASURE / STRATEGY	STATUS
Planning & Engagement Before and after you implement cost-effective building upgrades, you can engage staff and residents in energy-saving behaviors. After all, buildings don't use energy, people do. Start with these low-cost ways to amplify the message that you're taking steps to save energy, increase affordability, and protect the environment, all at the same time.		
Track Energy Use	Benchmark energy and water performance using EPA's ENERGY STAR Portfolio Manager: ☐ Update energy and water meters regularly ☐ Review consumption trends with management	
Education & Engagement	When meeting with residents, include unit-level actions they can take to save energy and water.	
Education & Engagement	Instruct staff to be diligent about: ☐ Turning off unnecessary lights ☐ Minimizing use of heating and cooling when possible ☐ Turning off appliances that are not in use ☐ Making sure model and vacant units are operated efficiently ☐ Looking out for energy waste, such as a broken photosensor ☐ Instruct nighttime security staff and/or courtesy patrols to turn off unnecessary lights.	
Education & Engagement	Host a competition among different floors, wings, or residents to take simple energy-saving actions, such as: ☐ Taking the stairs instead of elevators ☐ Utilizing window blinds ☐ Turning off unnecessary equipment and lighting	

** Indicates measures and strategies that are typically applicable only to mid-rise and high-rise multifamily communities.*

Stage 1: Retrocommissioning In EPA's recommended approach to building upgrades, retrocommissioning comes first because it provides an understanding of how closely the building comes to operating as intended. It also helps to identify improper equipment performance, what equipment or systems need to be replaced, operational opportunities for saving energy and money, and strategies for improving performance of the various building systems.		
Lighting	Clean light fixtures whenever a light is changed or replaced.	
Lighting	Conduct a monthly nighttime walk through to identify lights that could be turned off.	
Lighting	Regularly re-evaluate lighting and HVAC schedules in common area and vacant space. Match operations to actual, current occupancy conditions, and adjust controls and schedules accordingly.	
Lighting	Carefully review utility bills for vacant units, and investigate any anomalies in cost or consumption.	
Supplemental Load Reduction	Regularly inspect the building envelope: ☐ Re-install weather stripping, sealing, and caulking, where applicable ☐ Inspect thermal break gaskets ☐ Ensure that automatic door closers function properly	
Supplemental Load Reduction	Perform a thermal scan to identify thermal transmission and air leakage: ☐ Address any opportunities found	
Supplemental Load Reduction	Improve the management of vacant units by: ☐ Turning off breakers when feasible ☐ Adjusting refrigerators and freezers to their warmest settings ☐ Closing blinds to reduce heat gain in the cooling season or opening blinds to minimize the need for heating in cooler months ☐ Unplugging unneeded appliances during vacancy ☐ Turning off water heaters ☐ Adjusting vacant unit temperatures during business hours to no more than 65^0F during the heating season, and no cooler than 78^0F in the cooling season. During non-business hours, program thermostats to set the temperature back by at least 10^0F.	
Supplemental Load Reduction	If the swimming pool is heated, lower the temperature to 78ºF, and reduce hot tub temperatures to no warmer than 102ºF. Temperatures may be reduced to as low as 96ºF during warmer summer months. Utilize covers for outdoor pools and spas to minimize heat and water loss overnight.	
Supplemental Load Reduction	Add insulation to water heaters and/or hot water lines where needed.	
Supplemental Load Reduction	Adjust residents' water heater temperature settings to no warmer than 120^0F.	
Air Distribution Systems	Regulate the quantity of outside air in common areas to reflect design minimums and closely monitor air temperatures to ensure occupant comfort. During periods of extreme outdoor temperatures and/or humidity levels, consider raising indoor air temperatures by 2-3 ˚F (in the summer) or lowering indoor air temperatures by 2-3 ˚F (in the winter).	

Air Distribution Systems	Utilize ceiling fans in warmer weather to reduce air conditioning load. In temperate weather, open windows to eliminate the need for heating and air conditioning, and turn heating and cooling off if windows are open.	
Heating and Cooling Systems	At the beginning of each heating and cooling season, calibrate temperature, humidity, and pressure sensors on all major HVAC systems.	
Heating and Cooling Systems	Conduct regular preventative maintenance on heating and cooling equipment, including the following items: ☐ Check and replace filters regularly ☐ Clean evaporator and condenser coils ☐ Clean dampers, air ducts, blower units, housing units, and motors ☐ Inspect fans, bearings, and belts ☐ Maintain proper refrigerant charges	
Heating and Cooling Systems	Encourage the following preventative maintenance and operational strategies for chillers: ☐ Balance the chilled water flow at each chiller and maintain a well-balanced chilled water system (chilled water flow rates outside of design parameters can have a significant impact on chiller efficiency, capacity, and reliability) ☐ Check water quality for proper chemical balance ☐ Optimize chiller sequencing ☐ Inspect and clean heat transfer surfaces, condenser tubes and water boxes to reduce scale and fouling ☐ Examine, clean, and tighten electrical connections ☐ Check motor voltages and amperage ☐ Check insulation condition and examine fittings and valves for leaks ☐ Test and calibrate all temperature and pressure sensors associated with control circuits and safety circuits ☐ Maintain the oil levels within the manufacturer's recommended ranges ☐ Adjust refrigerant charges for maximum efficiency ☐ Verify proper temperature set points for chilled water control	
Heating and Cooling Systems	For central systems, maintain chilled water supply temperatures low enough to provide adequate dehumidification without causing excessively cold supply air temperatures.	
Heating and Cooling Systems	Encourage the following preventative maintenance and operational strategies for cooling towers: ☐ Clean hot water distribution deck, clean nozzles and replace any that are damaged or missing, and clean cooling tower fill material, louvers and drift eliminators ☐ Examine water make-up controls and adjust water levels within manufacturer ranges ☐ Verify and adjust the cooling tower water levels as necessary such that cooling tower sumps do not overflow either during operation or at shutdown ☐ Clean cooling tower sump and basin ☐ Inspect, clean, align, and adjust belts for maximum reliability ☐ Examine, clean, and tighten electrical connections on controls and motors ☐ Test and calibrate temperature sensors associated with control circuit ☐ Verify proper temperature set points for condenser water control ☐ Verify operation of bypass valve, if equipped	
Water Use	Routinely check all plumbing fixtures to identify and fix leaks.	

Water Use	Irrigate plants longer and less frequently. Deep irrigation allows more water to reach the roots and supports healthy plant growth.	
Stage 2: Lighting A lighting upgrade is the second stage in the five-stage building upgrade approach. Lighting upgrades come early in the process because the lighting system has a significant impact on other building systems and can affect heating and cooling loads and power quality. With good design, lighting energy use in most buildings can be cut at least in half while maintaining or improving lighting quality. Such designs typically pay for themselves in energy savings alone within a few years.		
General	Retrofit T12 and 32W T8 fluorescent fixtures and lamps with 25W or 28W T8 lamps/fixtures.	
General	Replace all incandescent bulbs, flood lights, and decorative spotlights with ENERGY STAR certified compact fluorescent light bulbs (CFLs) or LED bulbs.	
General	Replace incandescent exit signs with LED exit signs.	
General	Make bulk purchases of common CFLs: ☐ Offer residents the ability to purchase these bulbs at cost or offer to install a new CFL for their burned-out lamp free of charge. Maintain a receptacle in the leasing office where residents can bring burned-out CFLs for proper recycling.	
Exterior	Install lighting controls on exterior lighting, such as: ☐ Combination of timers and photocells for site and parking lot lighting ☐ Photocells on perimeter fixtures in parking garages ☐ Occupancy sensors in garages For areas that are currently on timers, adjust the schedules throughout the year to accommodate seasonal changes in hours of sunlight.	
Interior	Install lighting controls on interior lighting, such as: ☐ Occupancy sensors ☐ Photosensors and dimmers ☐ Elevator cab lighting controls ☐ Timers with one-hour override capabilities	
Stage 3: Supplemental Load Reduction Supplemental load sources are secondary load contributors to energy consumption in buildings—typically people, computers, lights, and the building itself. These loads can adversely affect heating, cooling, and electric loads. However, the effect of supplemental loads can be controlled and reduced through strategic planning and implementing energy-efficient upgrades.		
Appliances	When replacing appliances, use only ENERGY STAR certified products for the following: ☐ Refrigerator/freezers ☐ Dishwashers ☐ Washing machines ☐ Water heaters ☐ Air conditioners ☐ Ceiling fans	

Bldg. Envelope	Take steps to minimize heating and cooling load: ☐ Install weather stripping on doors and windows to eliminate drafts and air leakage ☐ Use window shades, tinting, films, or blinds to reduce heat gain in the summer (and heat loss in the winter) ☐ Install shades or blinds in common area windows where applicable ☐ Open windows rather than using mechanical heating or cooling equipment, when the weather is temperate	
Pools and Spa	Install timers on pool pumps, and set timers to avoid unnecessary operation during hours of non-use. ☐ Install variable speed motors on existing pumps for 24-hour pools, or when pool pump timers are prohibited.	
Vending machines	Install misers on refrigerated and non-refrigerated vending machines.	
Stage 4: Air Distribution Systems Air distribution systems bring conditioned (heated or cooled) air to people occupying a building, and therefore directly affect occupant comfort. Over the last several decades, significant improvements have been made to the design of air distribution systems as well as the way in which these systems are controlled. These improved designs and controls can results in dramatic energy savings.		
Controls	Evaluate installing CO_2 sensors inside buildings and CO sensors in parking garages to adjust ventilation rates.	
Stage 5: Heating and Cooling Systems Heating and cooling systems provide a useful service by keeping occupants comfortable. However, they also account for a significant portion of a building's energy use—typically about a quarter. It's possible to lessen this impact in both central and unitary systems by increasing their efficiency. Note that cooling systems generally have higher space-conditioning capacities than heating systems because waste heat from people, lighting, and electronics supplies a large portion of a building's heating requirement. Their higher capacities often translate into more opportunities for savings from cooling systems, though significant savings can still be had from heating systems.		
Controls	Install 7-day programmable thermostats in all apartments that do not already have one: ☐ Check thermostat settings quarterly and reset thermostats during move-out walkthroughs.	
Controls	Install programmable thermostats in common areas: ☐ Calibrate common area thermostats at least once a year to ensure that these devices are maintaining the correct temperatures ☐ Restrict resident access to common area thermostats	
Purchasing	Ensure that all new in-unit cooling systems: ☐ Have a minimum SEER rating of 14 ☐ Are compatible with existing air handling units ☐ Are ENERGY STAR certified ☐ Use refrigerants without CFCs Have a qualified contractor determine the optimal HVAC equipment size based on estimated heating and cooling loads, rather than on square footage or the size of the previous equipment.	
*Purchasing**	If new central HVAC systems are installed, ensure that they meet the minimum efficiency requirements in ASHRAE Standard 90.1-2007.	

Water Use Saving water can reduce both water and energy utility costs. In most cases, electricity or gas is used to heat water, so the less hot water that's used, the less energy is needed to heat water. In addition, the local water company uses energy to purify and pump water to a facility, as well as treat sewage. So, a portion of a water and sewage bill is really an energy bill.		
Fixtures	Install WaterSense labeled faucets or accessories such as sink aerators in bathroom faucets (maximum flow rate of 1.5 gpm). In common area restrooms, consider installing automatic shut-off devices on the faucets.	
Fixtures	Install low-flow (no more than 2.0 gpm) sink aerators in kitchen faucets.	
Fixtures	Install WaterSense labeled showerheads (maximum flow rate of 2.0 gpm)	
Fixtures	Install WaterSense labeled toilets (maximum flow rate of 1.28 gpm). If retrofitting existing toilets, install toilet flush valves of no higher than 1.28 gpm.	
Irrigation	Consider using recycled water for landscape irrigation, incorporating retention ponds or cisterns.	
Irrigation	Install your own sub-meter to measure irrigation water use (where feasible) if landscape irrigation is not separately metered by the water utility, ☐ Verify that you are not being charged sewer fees for water that is used for landscape irrigation, if landscaping water is on a separate meter from domestic water. Verify that you are receiving appropriate sewer credits for water used for landscape irrigation if irrigation is on a house meter	
Irrigation	Work with your landscaper to replant with native plants, species that are adapted to your region, and/or drought-tolerant plantings.	
Irrigation	Replace sprinklers with a drip irrigation system, where cost-effective.	
Irrigation	Install automatic rain shut-off valves, timers, or data-connected smart sensors to enhance control of the irrigation system based upon weather conditions and other parameters. Consider WaterSense labeled weather-based irrigation controllers.	